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# CAPTIVE BREEDING AND MAINTENANCE OF THE ROYAL PYTHON *(PYTHON REGIUS)*

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## INTRODUCTION

The author has observed and recorded this species of python in the wild (1981-1983) and has maintained and bred this python in captivity since 1988. It is the aim of this article to provide guidance on maintenance and captive breeding and to actively encourage interested keepers to breed this extremely rewarding species.

The Royal Python is seasonally one of the most readily available pythons in the U.K. These beautiful and attractively marked animals are arguably one of the best python species to keep in captivity when purchased as a neonate. They are widely distributed in West Africa, from Senegal to Sierra Leone, the Ivory Coast, Ghana, Benin, Togo and parts of Central Africa; also in the grassland provinces of Southern Sudan. Almost all Royal Pythons sold in this country will have been imported from Ghana. In the wild, the Royal Python is a terrestrial species inhabiting open forests or savannah grasslands, with few trees and rocky outcrops or kopjes. Currently, the majority of imports will be captive farmed from Ghana. This means that adult gravid females are collected from the wild, their eggs are hatched and the hatchlings exported. The females are either returned to the wild, not necessarily to their original locality, or sold for the cooking pot. Although this is an improvement on the previous practice of exporting gravid females, it is still far from satisfactory as restocking does not occur. These snakes are one of the most highly exploited species of python; not only for the pet trade, but as a source of food and leather. They do not have a high rate of reproduction, when compared to other python species, with egg clutch sizes being small and wild adults only breeding every two or three years.

## CAPTIVE ENVIRONMENT

Adult animals are housed in glass fronted, wooden vivariums that are fully internally sealed. Modern alternatives are fibreglass/GRP and moulded polyethylene and are probably the most hygienic. The author does not subscribe to housing adult Royal Pythons in plastic boxes. Vivarium size is 1.0m long by 0.6m wide by 0.45m high. Heating is provided by a 0.6m tubular heater, rated at 60w per 0.3m, covered by a protective guard that also acts as a basking spot. A pulse proportional thermostat controls the temperature and gradient. As this is a nocturnal species, which does not normally bask in direct sunlight, lighting is by room light only. Vivarium substrate is provided by newspaper for ease of cleaning; a hardwood chip such as beech would be equally suitable although more time consuming. Background humidity is maintained at between 50%-65%, except during the breeding season. As these animals are tropical, the author believes it important to match as closely as possible the temperature gradient present in the country of origin. These animals are therefore maintained with an ambient daytime temperature gradient of 82F-92F (28C-33C), and a night-time temperature gradient of 78F-88F (26C-31C), which falls within Ghana's mean annual temperature range. This is

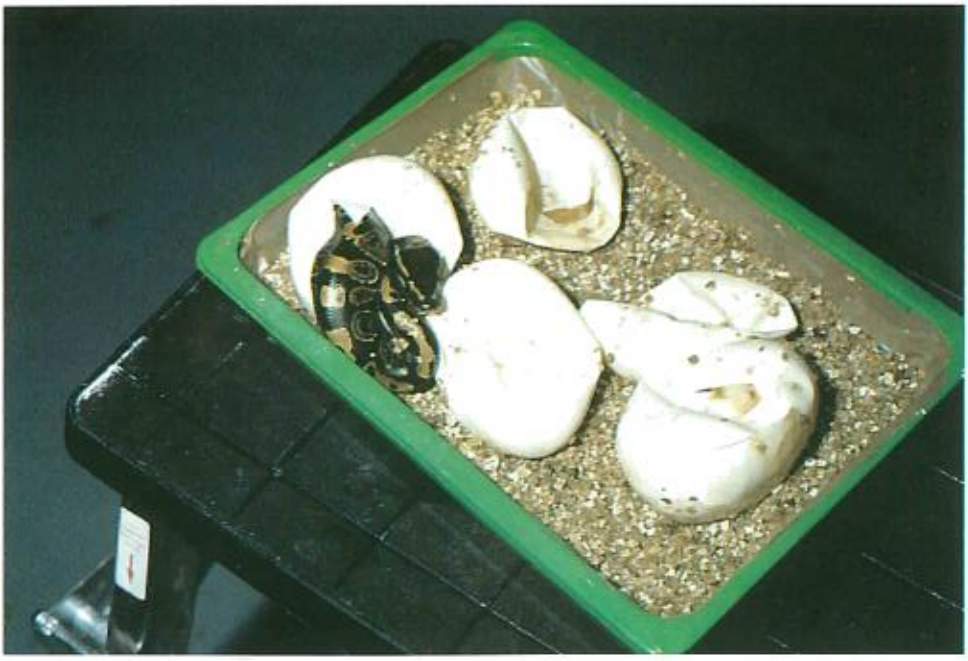

Plate 1: Hatching baby Royal Python with eggs

Plate 2: A pair of newly-hatched Royal Pythons

achieved by placing the heat source at one end and to the rear of the vivarium. The thermostat control sensor is placed at the opposite end at the front of the vivarium, where the minimum required temperature is set. Daytime/night-time temperature drop is also controlled by thermostat settings. Upturned flower pots or plastic trays with an opening cut out are provided as hides for security. These are also easy to keep clean and free from bacteria. Each vivarium houses two adult females except during the breeding season when males are introduced.

## HUSBANDRY

Royal Pythons have definite periods during the year when they will feed well, other periods when they can appear to be fussy, and a fasting period during the breeding season. As a general rule the author offers food every seven days, subject to ecdysis. Food items for adult royals will be mainly rats, but occasionally adult mice may be preferred. Gerbils as a food source are avoided, as Royal Pythons are difficult to wean off gerbils once tasted. Depending on the animal to be fed, food will either be laid in the cage in front of the snake or offered with tongs. Whenever possible, defrosted food items are offered. The animals are handled regularly, usually at cleaning times or for inspection, but never within three days of a feed except in an emergency. Royal Pythons quickly become used to respectful handling and appear not to be stressed by the experience. A large, flat-bottomed ceramic bowl is used to provide fresh water for drinking and bathing. These pythons can often be seen sitting submerged in their water bowl just prior to ecdysis. Faeces are removed as soon as possible and the area disinfected to avoid fungal or bacterial growths. All vivariums and their contents are thoroughly cleaned on a regular basis with 'Trigene', an antibacterial, antiviral cleaner available from vets. A 10% solution of household bleach such as 'Domestos' provides similar protection but without the detergent cleaning properties.

## BREEDING

Between the months of March and November the vivariums house either two females or two males. The conditions provided create a mean annual temperature range (as previously discussed) during the course of the year and thus the animals are at liberty to select their optimum temperature requirement at all times. The author's experience with breeding these snakes has established that NO COOLING outside this range is necessary. The size and condition of the adult snakes is considered extremely important. In this collection the females were not less than 1.25m in length and 1.45kg in weight; the males averaged 1.0m in length and weighed between 0.75-0.9kg. Observation indicates that weight is of crucial importance to good fecundity in females. Males should be in good condition but not overweight. In the wild, sexual maturity probably occurs at about four years old and is related to size. In captivity, due to more regular feeding and the absence of a parasite burden, sexual maturity occurs at about three years of age. In early December one male is introduced to each pair of females (however it is possible to put one male in with up to five females in a larger vivarium) and the vivarium sprayed with tepid water to increase the humidity above 85%. In almost all cases mating occurs spontaneously. On the rare occasions when a male has appeared uninterested, the introduction of a second male has induced combat which takes the form of wrestling, where one male tries to force the other to the ground in a show of dominance. The author has never observed agonistic behaviour between the male Royal Pythons, however the wrestling match invariably induces immediate copulation by the original male. The males are removed during the first two weeks of February and typically a mid-body swelling in the females has been noted twenty to thirty days after the last copulation. The mid-body swelling is the result of the ova being pushed forward in the body cavity to the

opening of both oviducts, which are approximately halfway along the Royal Pythons' body length. Immediately following ovulation and the mid-body swelling, the ova are taken into the oviduct, thus passing back down the body, at which point the mid-body swelling diminishes as the ova are positioned along the full length of the oviducts where they develop shells. At this point the Royal Python resumes its more normal proportions. (Barker and Barker 1994). The mid-body swelling lasts a relatively short time of approximately forty-eight hours. Once ovulation occurred, all the females in the author's collection stopped feeding and no further food was offered until after egg laying. Barker and Barker state that twenty days after ovulation female Royal Pythons begin an ecdysis cycle and that eggs are laid twenty four to thirty four days after ecdysis. The author has noted a wider variation, in that twenty-five days after ovulation the ecdysis cycle occurs and oviposition anywhere from twenty five to thirty eight days. Six clutches of varying size were produced (see Table 1).

**Table 1**

| Clutch Size | Egg Length (mm) | Egg Width (mm) | Egg Weight (gm) | Incubation Temp (F) | Days to first pip | Days to emergence | Comments |
|---|---|---|---|---|---|---|---|
| 5 | 72-85 | 50-52 | 71-84 | 89.5-90.5 | 61 | 66 | 100% Hatch |
| 6 | 70-85 | 49-56 | 78-87 | 89.5-90.5 | 58 | 64 | 100% Hatch |
| 6 | 70-83 | 50-54 | 74-84 | 89.5-90.5 | 58 | 63 | 100% Hatch |
| 8 | 69-81 | 45-50 | 71-80 | 89.5-90.5 | 60 | 66 | 1 dead in shell |
| 6 | 70-86 | 51-57 | 75-88 | 89.5-90.5 | 57 | 61 | 100% Hatch |
| 9 | 70-81 | 45-50 | 69-80 | 89.5-90.5 | 60 | 66 | 100% Hatch |

In all cases, egg laying has occurred between 10 April and 25 April. Eggs were deposited on the vivarium floor substrate. As it is extremely difficult to maintain 100% humidity within the vivarium it was decided to remove all eggs from the females and incubate artificially. This also has the additional benefit of allowing an earlier return to feeding for the females. It is important that females are allowed to rest and therefore breeding is only attempted every second year which closely matches their natural breeding cycle.

## INCUBATION

The eggs were removed immediately and placed on moist vermiculite (coarse or fine grain) in seed propagators of dimensions 35cm by 20cm with a domed see-through plastic top. This allows the maintenance of 100% humidity with good air circulation. External digital temperature probes were placed at the centre of the eggs in each propagator. The author has acquired two water jacket, oven type observation incubators, with internal glass doors. The propagators were placed in the incubator and the incubator set such that the egg temperature remained between 89.5-90.5F throughout the incubation period. Background room, and each propagator temperature was measured three times daily throughout the period. It was occasionally necessary during the first two weeks to spray the eggs, as several were observed to have indented. A fine tepid mist spray was used directly on the eggs, which then reflated within twenty-four hours. The eggs hatched as detailed in Table 1 with only one dead in shell from six clutches totalling forty eggs.

## REARING NEONATES

As each neonate Royal Python emerged from its egg, it was immediately removed and placed on moist tissue in an opaque plastic box of dimensions 40cm by 20cm. The moist tissue allowed maintenance of high humidity up to the first ecdysis, which occurred between nine and fifteen days after hatching. Food was offered two days after ecdysis in the form of medium sized mice, 25-30gms, or equivalent rat pup. In all cases the neonates fed within twenty-one days of first ecdysis. No assisted feeding was attempted nor deemed necessary, as it is the author's opinion that assisted or forced feeding interferes with natural selection. All thirty-nine hatchlings continued to feed vigorously and a group of 3.8 neonates was retained as an unrelated first generation captive bred group for future breeding.

## DISCUSSION

The Royal Python is normally a very docile species, popular with keepers due to its attractive markings and easy to manage size. Despite notable successes in breeding this species over the last few years in the U.K., there are still insufficient Royal Pythons bred in captivity. Vast numbers are still imported from the wild which must be a significant drain on the species as there is currently no re-stocking programme in place.

There still appears to be a perception that this is an awkward species with regard to its care and breeding in captivity (Mattison, 1982). The author feels that this perception is based largely on the fact that until recently, the majority of imported animals were adults. These animals suffered badly from stress, were difficult to feed and many died as a result. Despite this, many keepers now have animals that have been reared from neonate and given that the right conditions are emulated, should be actively encouraged to attempt breeding.

Many authors in writing about breeding this species have insisted that some form of cooling is necessary for fertile and successful breeding. (de Vosjoli, Klingenberg, Barker and Barker, 1994; Ross, 1990 and Wareham, 1990). It is the author's view that cooling outside this species' normal temperature range creates a stress induced mating response that is abnormal and can cause long term health problems. This is entirely unnecessary and provided that animals are given a reasonable temperature gradient within the vivarium, increased humidity is sufficient to induce spontaneous mating activity in almost all cases.

The condition of the females prior to breeding is crucial, as they must have sufficient follicular mass in order to ovulate successfully. Dependent upon vivarium type, it is likely that in most cases, artificial incubation will be more successful in producing a high hatch rate. The author believes that annual breeding should not be attempted with this species. It does not follow their natural pattern and over time is likely to reduce breeding success rate and shorten the animals' life.

Much of the literature available indicates that it is incorrect to spray directly on eggs during the course of incubation. This has proved unfounded not only with this species but all other python species where successful breeding has occurred. Provided that the water temperature of the mist is around 32C it has no detrimental effect on the eggs; in fact it rehydrates them more quickly and naturally than relying on air humidity.

## CONCLUSION

The Royal Python is an extremely attractive and rewarding species, particularly when obtained as a captive bred or wild imported neonate. They are easy to feed and house, rarely show aggression and adapt easily to respectful handling. Provided they are given conditions that closely match their natural environment, and are kept in good condition, they can be induced to breed fairly easily. As this is an over exploited species, both by the pet trade and for food and leather, it is essential that herpetologists keeping these snakes should attempt to breed them when conditions are right.

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